

NEW STALKED CRINOIDS FROM THE EASTERN COAST OF NORTH AMERICA.

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In 1885 Prof. A. E. Verrill mentioned that "a fine species of stalked crinoid, belonging to the genus *Benthocrinus*, was dredged in 1884 in 2,021^a fathoms, off Chesapeake Bay." Later, he referred to the specimen as a species of *Bathycrinus* "near *B. gracilis* Wyville Thomson." No further mention is made of it, and the record and specimen appear to have been forgotten. Recently, however, the example has been sent to Washington, together with a large number of other crinoids, from New Haven, where I have had an opportunity of examining it. It proves to be a remarkably fine specimen of a new species of *Bathycrinus*, allied to *B. aldrichianus*, from the tropical mid-Atlantic, but quite different from anything heretofore known.

The genus *Bathycrinus* was first discovered off the coast of Europe by the *Porcupine*, and has since been found abundantly in the north-east Atlantic, and recorded from the middle Atlantic, Antarctic Ocean, East Indies, mid-Pacific, off southern Japan, and off Kamchatka, in the last four localities only within the past year. The first definite record for the genus on the American side of the Atlantic was published in January, 1908, when a small species, *B. caribbeus*, was described from the West Indies. It is therefore with considerable satisfaction that I am able to add another species of this especially interesting genus to the marine fauna of the American coast.

BATHYCRINUS SERRATUS, new species.

1885. *Benthocrinus* VERRILL, Rep. U. S. Commissioner of Fish and Fisheries for 1883 (Pt. XI), p. 521.
1885. *Rhizocrinus lofotensis* VERRILL, Rep. U. S. Commissioner of Fish and Fisheries for 1883 (Pt. XI), p. 551 (part) (not of M. Sars).
1885. *Bathycrinus* sp. VERRILL, Rep. U. S. Commissioner of Fish and Fisheries for 1883 (Pt. XI), p. 552.

^a Typographical error for 2045.

Stem and basal ring lacking.

Radial funnel with somewhat convex sides, and the anterior angles produced anteriorly between the first costals, about twice as broad at its anterior end as high; the radials are strongly convex dorsally; first costals trapezoidal, about as wide at the anterior end as long, with a strong median elevation occupying the whole of the posterior border, but becoming narrow anteriorly; costal axillaries about twice as broad as long, trapezoidal, the anterior angle very low, the anterior edges very slightly curved, furnished with a prominent rounded median ridge, narrow posteriorly, but rapidly widening anteriorly; first three brachials oblong, not quite so long as broad; fourth brachial

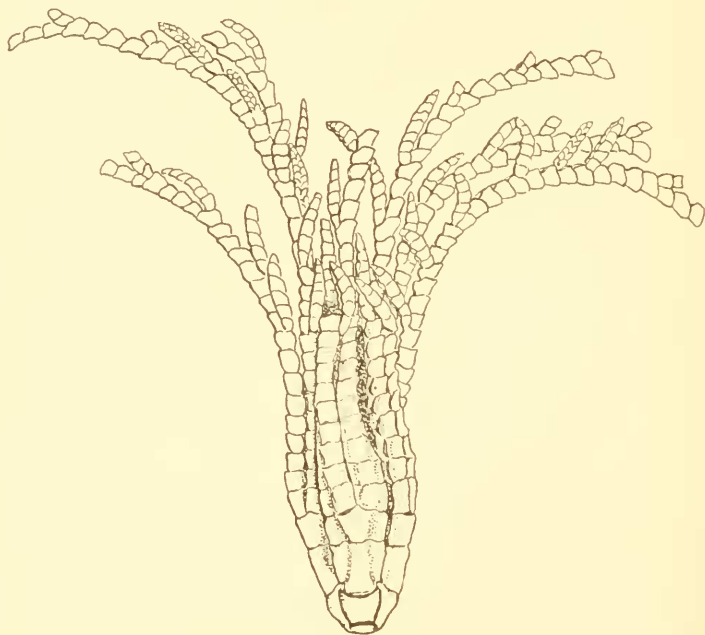


FIG. 1.—BATHYCRINUS SERRATUS; CROWN.

trapezoidal, rather broader than long; fifth brachial similar; following brachials squarish; the distal edge of the second brachial projects somewhat, those of the third and following being strongly overlapping, giving the arms a very serrate appearance; the first six brachials are provided with a strong rounded median ridge and thin lateral borders; the remaining brachials are strongly convex dorsally; the first pinnule is on the tenth brachial. Length from lower edge of radial funnel to tip of arms 40 mm. (fig. 1).

Type.—Cat. No. 22667, U.S.N.M., from U. S. Bureau of Fisheries steamer *Albatross*, station No. 2226; 37° 00' 00" north latitude, 71° 54' 00" west longitude (off the coast of Virginia); 2,045 fathoms.

A small fragment of the lower part of a stem from *Albatross* Station No. 2713, 38° 20' 00" north latitude, 70° 08' 30" west longitude (off the coast of Maryland), 1,859 fathoms, also appears to belong to this form.

This species is very distinct from any heretofore known from the Atlantic; the strongly serrate arms at once differentiate it from *Bathycrinus carpenteri* and *B. australis*, the somewhat convex and not at all constricted radial funnel separates it from *B. aldrichianus*, and the broadly rounded instead of sharp median ridge on the costals from *B. gracilis*.

Doctor Döderlein has recently expressed serious doubts regarding the possibility of considering *Bathycrinus* as a genus distinct from *Rhizocrinus*, a conclusion at which I had also arrived independently, through a study of material from other localities than the source of

his. I am here following him, however, in arbitrarily assigning certain species to one genus and others to the other, chiefly for the reason that the species in the western Atlantic fall sharply into one or other of these genera, and, until considerably more is known about the intermediate tropical Pacific forms, it would be rather hasty to reduce *Bathycrinus* to a synonym of *Rhizocrinus*. The West Indian species of *Bathycrinus*, described as *B. caribbeus* (fig. 2), evidently is much nearer *Bathycrinus gracilis* than to *Rhizocrinus lofotensis*, in spite of the elongate basal ring; but *B. equatorialis* (fig. 3), from the central Pacific between the Marquesas Islands and Central America, is, so far as can be judged from the stem and basals alone, practically intermediate.



FIG. 3.—BATHYCRINUS EQUATORIALIS; BASAL RING AND UPPER STEM JOINTS.



FIG. 2.—BATHYCRINUS CARIBBEUS; BASAL RING AND UPPER STEM JOINTS.

RHIZOCRINUS VERRILLI, new species.

1885. *Rhizocrinus lofotensis* VERRILL, Rep. U. S. Commissioner of Fish and Fisheries for 1883 (Pt. XI), p. 551 (part), pl. XXI, fig. 57 (not of M. Sars).

In 1885 Professor Verrill recorded, under the name of *Rhizocrinus lofotensis*, a small *Rhizocrinus* which had been obtained in 640 fathoms off Marthas Vineyard, Massachusetts. I have recently been enabled to reexamine the specimen, and find that it represents a species quite distinct from *R. lofotensis*, which I propose to call *R. verrilli*, in recognition of the great services rendered to science, particularly in regard to submarine life, by Professor Verrill.

The species may be described as follows: Basals and radials ankylosed, with no trace of sutures, forming a cup, about half as long again as its anterior diameter, with moderately and uniformly convex

sides: the portion of the stem remaining is composed of seventeen joints, with the anterior half of the eighteenth: the first stem joint is very short, the second about double its length, the third about double the length of the second, and so on to the fifth, which is squarish: the following joints increase more gradually in length, after the ninth being about twice as long as their terminal diameter: the ninth and following joints also are rather strongly constricted centrally, with bulbous ends; first brachials very short, over twice as broad as long; second brachials about as long as broad at the proximal end, trapezoidal, the distal end being about three-fourths the length of the proximal: remainder of arms lacking.

The total length of the specimen is 15 mm., of which the calyx represents a length of 1.5 mm.

Type.—Cat. No. 22698, U.S.N.M.

Professor Verrill regarded this specimen as a young example of *R. lofotensis*; but Sars says that in the young of that species the stem joints are more slender than in the adult, whereas in *R. verrilli* they are very stout, resembling those of *R. rawsonii* more nearly than those of *R. lofotensis*. The greatest difference is found in the first brachials of the two species, those of *R. lofotensis* being longer than broad, those of *R. verrilli* being twice as broad as long; in the latter, moreover, two of the first brachials are much larger than the other three, a point which I shall discuss more fully later.